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1. four copies, dated 1950 and 1951, of the Chinese industrial journal, Chemical Industry and Engineering, 化學工業 . This journal is edited by K C Chang, 50X1 張克忠 at Nanki University, 南開大學 near 50X1 Tientsin. The title of the journal is new and it has only been published since World War II. Most of the articles in the journals are the result of practical research. They are not highly academic. and do not represent original thinking. Although the articles are not out 50X1 standing, they can be of help to the Chinese economy because of their 50X1 practical nature. The authors give many references to papers by US chemists which indicate that many of them attended universities in the US. a number of the articles were written in English with Chinese summaries. 50X1

2. 50X1 Chang, the editor who, before World War II, had a good reputation as a professor at Nanki University. Nanki had a good chemical engineering department. 50X1

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several members of the journal's committee, including the following:

C L Wu 吳學(三名

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P S Tsou 鄒本燊

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Abstracts of Chinese Articles

3.

4. "Decolorizing Power of Clay Found in Taiwan". C W Zen, C S Chao, and C H Liu (China Petroleum Company, Singchu Laboratory, Taiwan) China) 1, No 1 & 2, 5-12, 1950. In Chinese with English summary. The decolorizing power of clay found in different parts of Taiwan has been compared according to the efficiency of removing color from kerosene solution colored with asphalt. The one found in Kiangtao, after treated with 20% H_2SO_4 for 5 hrs, gives the best results. The physical properties and the chemical composition of this clay are given. This article represents very routine work. It is possible that the article was forwarded to Nanki from Taiwan before the Chinese Communists overran China.

5. "Extraction of Soybean Oil with Ethyl Alcohol". S C Wen (Tzeloo Company, Vegetable Oil Factory, China). No 1 & 2, 27-32, 1950. In Chinese with English summary. For optimum recovery of soybean oil from soybean meal by extraction with ethyl alcohol, the concentration of the alcohol must be greater than 95% and the moisture content of the soybean meal less than 1%. The efficiencies of extraction obtained by varying the amount of alcohol, the concentration of alcohol, the size of the soybean meal, the number of extraction and the time of extraction are tabulated. Also represents routine work.

6. "Composition of the Latex of Ficus Elastica Planted in Chungking". K C Kao, and Y M Yen (Chungking Institute of Industrial Research, Chungking, China). 1, No 1 & 2, 33-36, 1950. In Chinese with English summary. The composition of Ficus Elastica growing in Szechwan province has been analyzed monthly from January to September. The rubber hydrocarbon content is highest in January (21.14%) and lowest in May (10.62%) and seems to be inversely proportional to the amount of rain fall.

7. "Purification of Tungstic Oxide Extracted from Tai-Ho-Shan Wolframite". C W Ting, and H H Ting, (The former Institute of Engineering Research, National Peiyang Engineering College, China). 1, no 1 & 2, 37-48, 1950, In Chinese with English Summary. Various methods of purification have been studied. The following one yields WO_3 99.99% pure, containing only 0.007% Fe_2O_3 and 0.003% SiO_2. (1) precipitation of crude WO_3 from Na_2WO_4 solution, followed by dissolution of it in NH_4OH, (2) crystallization of ammonium paratungstate from the solution, followed by decomposing it with NaOH, (3) repeat step (1), followed by crystallization of ammonium paratungstate which, when acidified, yields the WO_3 of high purity. These processes are well known. Before World War II, Peiyang College in Hopei Province had a good reputation in mining.

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8. "Preliminary Study of the High Boiling Components of Formosan Citronella Oil". S L Liu. 1, No 1 & 2, 55-60, 1950. In English with Chinese summary. Distillation of the high boiling fraction of Formosan citronella oil at 4-8 mm pressure yields the following: 39% boils at 125-155°C and 4 mm pressure, 28% boils at 155-180°C and 4 mm pressure and 33% boils above 180°C at 4 mm pressure. Saponification of 5880 grams of this mixture yields 233 grams of phenolic substances and 170 grams of non-phenolic acids from which 117.6 grams of d-citronel ic acid is obtained. In the unsaponified neutral portion, cymbopol has been isolated. Has no scientific significance, but may have local value.

9. "Solvent Dewaxing of Lubricating Oil with Butanol". M C Chang, B F Wang and H S Tang. 1, No 3 & 4, 75-81, 1950. In Chinese with English summary. Mixtures of n-butanol and naphtha are used as solvents to dewax Kansu-produced lubricating oil (630-970°F calculated for atmospheric pressure). The higher the amount of n-butanol in the mixture, the better is the dewaxing power but the operation is more difficult. The yield of the oil is increased if the amount of solvent used is high, but the dewaxing is then less thorough. The lower the dewaxing temperature, the lower is the yield of the oil. The best operating conditions are: n-butanol 40-60%, naphtha 60-40%, amount of solvent equal to about 4-5 times that of the oil and dewaxing temperature less than 0°F.

10. "Modification of Low's Method for the Determination of Mn in Ore". T T Kang and C C Pao. (Applied Chemistry Research Association, Department of Chemical Engineering, Nanki University, China). 1, No 3 & 4, 82-85, 1950. In Chinese with English summary. The following suggestions have been made. (1) If the Mn content of the sample is higher than 20%, the amount of the sample taken should be about 0.9 gram. If it is less than 20%, the amount of sample taken can be more but should not exceed 0.5 gram. (2) After the filtration of the MnO_2 precipitate, the filtrate should be tested with saturated Br_2 water. In case a turbidity appears, the analysis should be repeated with less amount of sample. (3) A blank test should be made to determine the amount of $KMnO_4$ reduced by filter paper. (4) The solution after the addition of H_2SO_4 should not be evaporated to complete dryness inorder to avoid any difficulty in bringing the residue to solution again.

11. "Comparison of A S T M Method and Redwood Method for the Determination of Moisture Content in Petroleum and Petroleum Products". K C Peng and T S Wen. (Chungking Institute of Industrial Research, Chungking, China). 1, No 3 & 4, 85-88, 1950. In Chinese with English summary. Comparison is made by using petroleum products of known moisture content and the results obtained agree within experimental error. 50X1 Since Redwood method does not need any dry solvent, it is to be preferred in the determination of moisture in petroleum and petroleum products. 50X1

12. "Separation of Saturated and Unsaturated Oil Portions of Tallow by Means of Furfural Extraction." K C Chang and K M Ming (Department of Chemical Engineering, Nanki University, China). 1, No 3 & 4, 89-95, 1950. In Chinese with English summary. A mixture of furfural and tallow is heated to above 85°C to form a homogeneous solution and then cooled to 67°C to separate the furfural layer which contains more unsaturated tallow from the more saturated tallow layer. Increasing the amount of furfural used and using multi-stage extraction yield products having lower iodine number. This is ordinary work.

13. "Simplified Estimation of Aromatic Content in Gasoline". Y M Liu, (Chungking Institute of Industrial Research, Chungking, China). 1, No 3 & 4, 136-45, 1950. In English. The following equation has been suggested for the determination of the aromatic content of gasoline: aromatic content of gasoline in volume % = $\frac{(g n_d^{20} - g n_{calcd}) \times 10^4 - 0.57B}{(a n_d^{20} - a n_{calcd}) \times 10^4} \times 100$,

where $g n_d^{20}$ = observed refractive index of a certain boiling cut of gasoline at 20°C for sodium D line, $g n_{calcd}$ = calculated refractive index of the same cut of gasoline at 20°C for sodium D line from its density and temperature coefficient of density at 20°C according to the equation of Lipkin and Martin (Ind Eng Chem Anal Ed 18, 380 (1946)), $a n_d^{20}$ and $a n_{calcd}$ are observed and calculated refractive index of the aromatics in the same cut of gasoline at 20°C for sodium D line respectively and B is the bromine number of the same cut of gasoline. On the base of available data the aromatic content calculated by this equation has an average deviation of -0.8% and a maximum deviation of -3% from the cross-check experimental values. This article is more academic than most of the other articles in the journal. His equations are adaptations of equations developed by US chemists.

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14. "Simple Method for Determining Double Bond Index of Pure Unsaturated Hydrocarbons and Petroleum Fractions". Y M Liu and N T Chu. (Chungking Institute of Industrial Research, Chungking, China). 2, No 1, 12-27, 1951. In English with Chinese summary. A formula $DBI = \frac{0.8\,(n_d^{20} - n_{calcd})M}{Q}$ is proposed for the determination of the double bond index (DBI) of pure unsaturated hydrocarbons, petroleum fractions and other hydrocarbon mixtures, which can be used to identify the prominent type of aromatic or olefinic hydrocarbons in a petroleum fraction, where n_d^{20} is the measured refractive index for sodium D line, n_{calcd} is the refractive index calculated from the formula of Lipkin and Martin (Ind Eng Chem, Anal Ed, 18, 380 (1946)), M is the molecular weight which for unknown hydrocarbons or petroleum fractions is calculated from the boiling point - density relationship of Mills, Hirschler and Kurtz (Ind Eng Chem 38, 443 (1946)), and Q is the number of double bond per molecule, which for unknown hydrocarbons or petroleum fractions, is calculated from M and the weight percentages of H_2 in the sample before and after hydrogenation. The DBI of 113 pure unsaturated hydrocarbons of nearly all types of unsaturation and five petroleum fractions are evaluated by this formula. The results obtained agree fairly well with that determined by the method of Sankin and Martin (Anal Chem, 20, 598 (1948)). However, for the determination of the predominant types of unsaturated hydrocarbons in petroleum fractions containing saturated hydrocarbons, the DBI should be determined on the unsaturated concentrate, if the present method is used.

15. "Generalized Equation for the Latent Heat of Vaporization". P L Chu and S S Chin (Chekiang University, Hangchow, China). 2, No 1, 28-35, 1951. In English with Chinese summary. An equation $\frac{\lambda}{T_c} = -6.7 \log P_r - 7.\frac{T_r}{(1 - T_r)} 0.62$ has been derived, which can be used to calculate the molal heat of vaporization of a substance at any temperature, where T_c is the critical temperature of the substance and P_r and T_r the reduced pressure and temperature. The error of the results obtained is generally less than 5%. The equations as derived from US and British work.

16. "Preparation of Vanadium Catalyst". T H Yu (Yong-li Chemical Company, China). 2, No 2, 3-9, 1951. In Chinese with English summary. Vanadium catalyst used for H_2SO_4 manufacture has been prepared according to the following procedures. 13.1 parts of V_2O_5 (containing 84% V_2O_5) is moisted with 10 parts of H_2O and dissolved in a KOH solution containing 8.0 parts of 85% KOH in 10 parts of H_2O. To this solution are added in succession 6.4 parts of 93% H_2SO_4 and a solution containing 25.8 parts of 95% KNO_3 in 10 parts of H_2O. 6.0 parts of sulfur and 115.0 parts of kieselguhr (about 100 mesh and purified by heating with H_2SO_4) are then added to this mixture together with enough water to give a consistency suitable to be extruded. The wet pellets which are about 5 mm in diameter and 5 - 8 mm in length are dried at 700°C for one hour. The yield is 135 parts with a bulk density of 0.564 kg/liter and a compressive strength of 35.9 - 58.0 kgs/cm^2 and does not become disintegrated when exposed to air after being dipped in concentrated H_2SO_4. Using a catalyst column 180 mm long and containing 150 cc catalyst, the percentage of conversion of SO_2 to SO_3 is found to be 97.7% at 450°C with a starting SO_2 concentration of 7% and a space velocity of 800/hr.

17. "Preparation of Vanadium Catalyst". K C Chang and L Sun. (Department of Chemical Engineering, Nanki University, China). 2, No 2, 10, 1951. In Chinese. Vanadium catalyst used for H_2SO_4 manufacture has been prepared as follows. 5 grams of ammonium meta-vanadate is mixed with 5 grams of KOH in 50 cc of H_2O and the solution is heated to remove ammonia. To this solution are added 21.5 grams of lead acetate, 2 grams of alum and 70 cc of water glass (sp gr 1.33). The mixture is then partially acidified with about 90 cc of 2N H_2SO_4, cooled and filtered. The precipitate, after extrusion to form small cylindrical pellets, is dried at 100°C. The yield is 43 grams and contains 8.6% V_2O_5. Before use, the catalyst is treated in SO_2 gas (2 - 7%) at 450°C for four hours. Using a catalyst column 20 cm long and 2.2 cm in diameter, the conversion of SO_2 to SO_3 is found to be 98.3% at 410°C ± 10°C, with a starting SO_2 concentration of 7% and a flow velocity of 1000 cc/min.

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18. "Synthesis of Sodium Alkyl Naphthalene Sulfonates and their Wetting Properties". K H Yuin and C Chang. Department of Chemical Engineering, Tsinghua University, China. 2, No 2, 11-13, 1951. In Chinese with English summary. Sodium di-n-butylnaphthalene sulfonate and sodium di-isoamylnaphthalene sulfonate are prepared and their wetting properties compared with that of Turkey red oil by a modified Draves method. The di-n-butyl compound is found to be superior to Turkey red oil as a wetting agent. Their testing methods are very crude.

19. "New Azo Dyes from Naphthidine". K H Yuin and C L Chain. (Department of Chemical Engineering, Tsinghua University, China). 2, No 2, 14-17, 1951. In English with Chinese summary. Two new azo dyes are synthesized by tetrazotizing naphthidine and coupling with (1) one molecule of salicylic acid followed one molecule of H-acid, (2) two molecules of H-acid. Both are direct dyes for cotton, wool and silk. The first is brownish grey on cotton, maroon on wool and silk, the amount of dye used being 4%, 3% and 3% respectively. The second is bright blue on cotton, violet blue on wool and silk, the amount of dye used being 3%, 2%, and 1% respectively. The fastness to light of these dyes on wool and silk is very good, while that on cotton is similar to that of common substantive cotton dyes.

20. "Studies on Tung Oil. I. Composition of the Fatty Acids". C T Chen. (Tung-ze University, China). 2, No 2, 18-22, 1951. In English with Chinese summary. Tung oil is extracted from fresh seeds of Aleurites Fordii Hemsley with gasoline at $<75^{\circ}C$. The methyl esters of the fatty acids in Tung oil are prepared by shaking 1 volume of the oil with 2 volumes of CH_3OH containing 1% (based on the weight of the oil) sodium. The esters are separated by fractional distillation. From the amount of each fatty acid obtained from the esters, the percentage composition of the fatty acids in Tung oil is estimated to be as follows: lauric acid 0.2%, palmitic acid 3.0%, oleic acid 15.8%, myristic acid 0.5%, stearic acid 2.2% and elaeostearic acid 70.0%, the total accounted for being 91.7%. This subject is out of my field, but seems to be well prepared.

21. "Studies on Tung Oil. II. The Chemical Mechanism of Gelation and Formation of Boiled Oil". C T Chen. (Tung-ze University, China). 2, No 2, 22-32, 1951. In English with Chinese summary. The heat polymerization of Tung oil, α and B-elaeostearic acid and methyl B-elaeostearate, in some cases with the addition of sulfur, has been studied. The time needed for the gelation of Tung oil is found to decrease with increase of temperature, 25 hours at 170°C, 4-1/4 hours at 200°C, 19-1/2 minutes at 250°C, 15 minutes at 280°C and 5 minutes at 320°C. The products of heating methyl B-elaeostearate at 230°C for 10 hours in CO_2 atmosphere are separated by vacuum distillation, from which a dimer is obtained, indicating that the degree of polymerization is two. The same dimer is obtained together with a small portion of higher polymers from the heat polymerization products of the methyl ester of Tung oil but a large portion still remains unpolymerized up to the gelation point. The remaining monomer upon saponification in some cases yields a new liquid isomer of elaeostearic acid. This indicates that on heating part of the ester is polymerized and part undergoes isomerization to produce a new liquid isomer which can no more be polymerized on further heating. The isomerazation is remarkable especially when the heating is carried out at temperatures below 280°C for a long time or at temperatures above 300°C for a short time and when sulfur is added as a catalyst. This explains the fact that a stand oil produced at 280°C has different properties from that prepared at over 300°C or in the presence of sulfur. From the results obtained by oxidation of the dimer with $KMnO_4$, ozonolysis of the dimer and dehydrogenation of the dimer with Se, it is concluded that the dimer is a mixture of some derivatives of hydrogenated benzene and hydrogenated naphthalene, containing $-CH(CH_2)_3CH_3$ and $=CH(CH_2)_7COOH$ radicals in the approximate ratio of 2:1 and that in the heat polymerization of the ester of B-elaeostearic acid according to the diene synthesis mechanism, the double bond at the positions of $\Delta^{9,10}$ and $\Delta^{11,12}$ are probably used as diene components.

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